ACT BOOK
MBER TWO

AGRICULTURAL
CUBA

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New Orleans

AGRICULTURAL CUBA

Condensed Facts Regarding the Products and Possibilities of Agricultural Development of the Republic.

Including

Statistics and Data of Reference

AGRICULTURAL CUBA

THE Cuban Department of Agriculture, Commerce and Labor while under the direction of a member of the National Cabinet, is sub-divided into three distinct departments for purposes of efficiency. One section supervises the sugar and tobacco plantations, maintains an agronomic station and experimental farm and publishes an official bulletin along educational lines. This department has in charge agricultural colonization, the official cattle register and the meteorological service.

The second section has in charge all matters pertaining to Mines, Forests, Banks, Mercantile Establishments and Corporations. The Copyright, Trade-mark and Patent Offices, as well as the Bureau of Weights and Measures and the Bureau of Labor and Colonization and in short all matters relating to the promotion and regulation of Commerce and Industry come under the control of this section.

A third section regulates hunting, fishing, the protection of birds and deals with the protection against pests.

In this work we deal more particularly with agricultural products as they are known in the United States, instead of attempting to cover the varying duties of the Department as a whole.

At first glance it would appear that this department is too broad in its scope but when we realize that the Republic of Cuba in area is about the same size as our Pennsylvania, the reason for grouping these departments will be apparent.

SUGAR THE LEADING CROP

The production of cane sugar represents seventy-seven per cent of the agriculture of Cuba. Climate and soil make Cuba the natural sugar growing country of the world and a reading of the following will demonstrate the importance of this crop in international commerce.

AVERAGE PRODUCTIVITY

An acre of ground in Cuba ordinarily produces about ten (10) sacks, but the average for the Island is about twelve sacks, since considerable of the new land will produce far more than the average. Twelve sacks per acre represents 3900 lbs. of sugar, each sack weighing thirteen arrobas of twenty-five pounds each, or a total of 325 pounds per sack. Thus, even under minimum conditions, a sack of sugar is worth approximately $8.50. If the grower plants on land belonging to the mill his share is from forty-five to fifty per cent on the "first" sugar, that is, the first-grade sugar. This is about four and one-half or five per cent of the weight of the cane, and at twelve sacks to the acre will amount to from $45.90 to $51.00 per acre. If the owner plants on his own land, he receives from fifty-five to sixty per cent of the first-grade sugar, or approximately five and one-half to six per cent of the weight of his cane in sugar, which would amount to from $56.00 to $61.00 per acre; the remainder going to the mill. The mill receives the benefit of all second grade sugar, which is from one and one-half to two sacks of sugar to the acre. It also receives all of the molasses.

Sugar cane is a crop to count upon and it is one that does not require the care and delicate attention necessary for the production of tobacco and other sensitive crops. To those of limited circumstances, cane offers great opportunities since the mills make liberal allowances in advances to the growers, furnishing them with oxen, implements and provisions necessary to carry them through the (crop) season. The production of cane does not require a great amount of skill. The plowing for Spring planting is done in January, February and March, and planting in April and May. Fall planting is done in August and as late as September, sometimes.

CUBA'S CANE SUGAR PRODUCTION

According to Mr. H. A. Himely, Sugar Statistician, Cuba has produced the greater portion of the world's sugar supply since 1854, as shown by the following figures:

Year	Tons	Year	Tons
1853	322,000	1885	631,967
1854	374,000	1886	731,723
1855	392,000	1887	646,578
1856	348,000	1888	656,719
1857	355,000	1889	560,333
1858	385,000	1890	632,368
1859	536,000	1891	819,760
1860	447,000	1892	976,789
1861	466,000	1893	815,894
1862	525,000	1894	1,054,214
1863	507,000	1895	1,004,264
1864	575,000	1896	225,221
1865	620,000	1897	212,051
1866	612,000	1898	305,543
1867	597,000	1899	345,260
1868	749,000	1900	308,543
1869	726,000	1901	635,856
1870	726,000	1902	850,181
1871	547,000	1903	998,878
1872	690,000	1904	1,040,228
1873	775,000	1905	1,163,258
1874	681,000	1906	1,198,749
1875	718,000	1907	1,427,673
1876	590,000	1908	961,958
1877	520,000	1909	1,513,582
1878	533,000	1910	1,804,349
1879	670,000	1911	1,480,217
1880	530,000	1912	1,893,687
1881	493,764	1913	2,429,240
1882	595,837	1914	2,596,567
1883	460,397	1915	2,582,845
1884	553,987	1916	3,205,571 (Estimated)

It will be noted that there has been a general increase in production since 1897, when 212,000 tons were produced, as against 3,000,000 tons, estimated, in 1916.

The value of Cuba's sugar crop forms an accurate index to her commercial prosperity. The average annual value for some years past has been in the neighborhood of $165,000,000.00. The first year of the European War raised this figure to $204,000,000.00, and with the increased acreage of cane, which high prices naturally brought forth, some 3,000,000 tons have been produced in 1916, at a value of over $250,000,000.00. In all Latin-American countries, there is no one industry that yields comparatively anything like this sum for export, and when one considers that the area of Cuba is but 47,000 square miles, and that her population is but 2,500,000, a clear conception can be formed of the importance of the sugar industry in Cuba.

This industry alone produces an average of $100.00 for every man, woman and child in the Republic.

Every acre in cane in Cuba means $90.00 to $100.00 of wealth, and only about one-fifth of the available land is utilized for sugar growing. Many an estate, during the last year, has yielded a return that more than equals the full value of the property, including land and implements.

Because of the careful method of handling, both by individual owners of plantations, and for the purpose of recording the shares of "Colonas" or tenant farmers, it is possible to definitely publish a table of costs which may be taken as authentic in sugar production:

ESTIMATE OF THE COST

Of converting one hundred acres of grass land into sugar cane together with the profits derived from same during a period of two years.

FIRST YEAR

Cost of plowing, planting and cultivating, first year	$ 2,400.00
Cost of cutting 240,000 arrobas (25 pounds)	2,400.00
Cost of hauling to mill	1,200.00
Incidentals per 100 acres	1,200.00
	$ 7,200.00
Yield of cane per 100 acres, 240,000 arrobas.	
Amount of sugar received in exchange for said cane at the rate of 6 arrobas for each 100 arrobas of cane, 14,400 arrobas.	
14,400 arrobas—360,000 pounds of sugar @ 4c	$14,400.00
Expense of planting, cultivating and delivering same, first year	7,200.00
Profit per 100 acres	$ 7,200.00
Gross returns on 1,000 acres	144,000.00
Gross expenses on 1,000 acres	72,000.00
Net profit on 1,000 acres	$72,000.00
Net returns per acre	72.00

SECOND YEAR

Cost of cleaning	$ 1,200.00
Cost of cutting 100 acres of cane	2,400.00
Cost of hauling to mill	1,200.00
Incidentals per 100 acres	400.00
	$ 5,200.00
Gross returns on 1,000 acres	$144,000.00
Gross expenses on 1,000 acres	52,000.00
Net profit on 1,000 acres	$ 92,000.00
Net returns per acre	92.00

In the total profits, drawn at the conclusion, 1,000 acres are taken since the latter represent the usual size of a colona.

THE WORLD'S DEMAND FOR SUGAR

The world's demand for sugar, since 1850, has been on the gradual increase, and bids fair to continue in even greater ratio than the past.

In the fifties, the consumption for the average American family was two pounds per week.

In the eighties the demand increased to five pounds per week.

In 1900, six pounds per week were consumed by the American family.

And today the consumption runs to between eight and nine pounds.

This applies to the fine sugar purchased in the stores and not the sugar we eat in fruits, potatoes and other foods.

Within two short generations, we have developed a national demand for sugar equivalent to four times our former supply.

No doubt much of this increased consumption is due to the prosperity of the United States, for while our average consumption, per family, in this country is, at the present time, between eight and nine pounds per week, the consumption in Bulgaria, Roumania and Italy amounts to but about one pound per week.

The world's demand for sugar is universal and depends primarily on the fact that sugar is one of the cheapest foods for the human economy. Prosperity naturally has a marked effect on the purchasing of sweets in which sugar plays such an important part. It is interesting to note the comparison per capita circulation of money and per capita sugar consumption as shown in the following table:

	Per Capita Circulation of Money	Per Capita Annual Sugar Consumption
United States (1914)..	$35.18	84.29 lbs.
Germany (1913).....	19.29	45.13 lbs.
Austria (1913).....	12.08	29.17 lbs.
Italy (1913).....	8.82	11.68 lbs.

England, with a per capita circulation of money less than five-sevenths of our own, has an apparent consumption of 93.37 pounds of sugar per capita, as against our 84.29 pounds.

Considerable of this increase may be accounted for in the immense production of jams, marmalades and other preserves exported by England. Taking this fact into consideration, it is safe to estimate that England's per capita consumption is not as high as our own.

The per capita circulation of money in France is larger than in the United States, but the high cost of sugar and the cheapness of wine makes their sugar consumption considerably less than ours.

Australia has a $47.18 per capita circulation and consumes one hundred pounds of sugar per capita annually.

This condition is true both as to a comparison between nations and between sections of the same nation, as well as between different periods of a nation's prosperity.

The following table shows comparative consumption of sugar in the United States during three typical periods:

	Per Capita Circulation of Money	Per Capita Annual Sugar Consumption
1850.....	$19.41	39.46 lbs.
1880.....	26.93	58.91 lbs.
1914.....	35.18	84.29 lbs.

Sugar is one of the best elements for a balanced ration since it has a heat and energy-producing value as great as lean meat, and that the nitrogen retention of proteid food, such as meat, fish, eggs and milk, is increased twenty-five per cent when consumed with sugar. This fact is shown by the following table:

Meat and Fish	87%	Dairy Products	93%
Eggs	89%	Vegetables	95%
Fruits	90%	Sugar	98%
Cereals	91%		

Sugar is no longer considered a luxury, and in proof of this our national candy bill exceeds $500,000,000.00 per year.

In 1870 the total production of cane and beet sugar amounted to 2,750,000 tons.

In 1914 the world's production of sugar had risen to 18,773,486 tons—an increase of more than 600 per cent.

The sugar production of the world is equivalent to three times the amount of gold mined each year. It is four times as great as the production of petroleum. It is three times as great as the production of tobacco and four times as great as the production of coffee. Six times as great as the production of rubber, and is larger than the entire cotton crop of the world. If the demand for sugar increases during the next fifty years, as it has increased during the past fifteen, we must increase our facilities of production to at least seven times their present capacity.

On the other hand, if the demand should not increase at all, sugar has been established as a world's food beyond any possibility of deterioration.

SUGAR PRODUCING PLANTS

There are two classes of sugar in nature, which may, for lucidity, be called single sugars and double sugars. Cane sugar, milk sugar, malt sugar, are some of the double sugars. Grape sugar, and fruit sugar are common single sugars.

Single sugars are produced from double sugars by submitting them either to heat, acid or ferment. The double sugars are of no use as food while they remain in their double state. They cannot be assimilated in the human body for the formation of organic tissue and the production of heat and energy. Only the single sugars are available for this purpose.

Cane sugar has two and one-half times the sweetening power of fruit sugar and more than two and one-half times the sweetening power of grape sugar.

Sugar has been manufactured for centuries from different species of plants by the natives of India. The bamboo is a sugar-producing plant which was utilized by the people of Asia and is supposed to be the first plant from which sugar was extracted. Sugar is manufactured from raisins in practically all of the countries of Southern Europe and Western Asia.

Indian Corn has been used experimentally in the manufacture of sugar, while sorghum, or Chinese cane, with a high sugar content, yields a large syrup crop, but for chemical reasons, little or no sugar.

Sugar has been produced in the United States from watermelons.

But for practical purposes, the commercial sugar of the world is produced from the juice of the cane or the beet.

CANE VS. BEET

The Bengalese of India are responsible for the discovery of cane sugar, which discovery was made in the third or fourth century, A. D.

From the fifth century on, this discovery spread into Arabia, Egypt, Spain, Portugal, The Canary Islands, Brazil and Cuba, and thence around the world.

The making of sugar from beets we owe to Napoleon Bonaparte.

In 1804-5 the business affairs of Europe were in much the same tangle as they are in war times of today.

When Nelson destroyed the French fleet off Trafalgar and England became mistress of the seas, she shut off forever Napoleon's intention of invading the British Isles. At that time Napoleon devised what was known as the "Continental System" which dealt a disastrous blow to the cane sugar industry.

He tried to isolate England by forbidding commercial communication between England and the entire continent of Europe, with the result that the importation of sugar was completely shut off.

Meanwhile the lack of sugar became an important war time problem which required vigorous action. He discovered that sugar could be produced from grapes and from beet roots, and also experimented with other fruits for the production of this national necessity.

After a number of costly experiments had been directed toward the production of grape sugar, with poor results, Napoleon, in 1811, ordered

32,000 hectares—about 75,000 acres—to be planted with beet roots—distributed over the several provinces—and established four schools in which sugar manufacture was to be taught. Meanwhile he stifled what little competition cane sugar might still be offering, by forbidding all importation from the East and West Indies.

In 1812, the number of sugar schools was increased and 100,000 hectares were planted—247,100 acres — and 324 factories were in operation.

Germany and Austria were quick to see the advantage and led out in the beet sugar industry.

By 1830 the beet sugar industry had reached a high point of production.

The rapid development of the beet sugar industry in Europe had an ill effect on the production of cane sugar for obvious reasons. It was only produced by the most primitive methods and only in sufficient quantities to supply the declining demand.

It was not until the eighties that the cane sugar planter began to realize the natural advantages of cane sugars over those of beet. He lived in tropical style, well up to his income and invested the least possible money in improvements.

In the early 'eighties capital, in moderate amounts, began to be available for sugar planters and the manufacture of cane sugar took on new life.

By 1880 the beet sugar industry had climbed up to a point of production approximately equal to that of cane sugar. The following table illustrates the world's production of sugar, both beet and cane, up to and including 1914:

Years	Cane	Beet	Total
1870	1,850,000	900,000	2,750,000
1880	1,860,000	1,810,000	3,670,000
1890	2,580,000	2,780,000	5,360,000
1898	2,850,000	4,650,000	7,500,000
1900	3,056,294	5,590,992	8,647,286
1902	4,079,742	6,913,504	10,993,346
1903	4,163,941	5,756,720	9,920,661
1904	4,234,203	6,089,468	10,323,631
1905	4,594,782	4,918,480	9,513,262
1906	6,731,165	7,216,060	13,947,225
1907	7,329,317	7,143,818	14,473,135
1908	6,917,663	7,002,474	13,920,137
1909	7,625,639	6,927,875	14,553,514
1910	8,327,069	6,597,506	14,914,575
1911	8,422,447	8,560,346	16,982,792
1912	9,006,030	6,820,266	15,886,296
1913	9,232,543	8,976,271	18,208,814
1914	9,865,016	8,908,470	18,773,486
1915–16	10,333,000	6,306,102	16,639,102

There is no difference between beet sugar and cane sugar, when refined. The chemical composition, the quality of taste, and the commercial value are identical. It is just a question of which class of sugar can be produced and delivered to the customer at the least cost.

CUBA A NATURAL CANE COUNTRY

The climatic conditions required for the profitable production of sugar beet are entirely different from those required for the production of sugar cane. The growing of cane began in the tropics and has never been successfully produced in other sections. It requires a full nine months' growing season of hot days and will not withstand cold weather. It requires both moisture and sunshine and needs an annual rainfall of from fifty to sixty-five inches. In Cuba, where these natural conditions exist, it requires a minimum amount of labor.

Land for the growing of sugar beet is worth from $40.00 to $200.00 per acre for other purposes, while cane grows best in the tropics where land is worth from $20.00 to $50.00 per acre and where the value of mahogany and cedar generally pays for the cost of clearing.

The beet requires expensive irrigation, cultivation and care, including high priced temperate zone labor, whereas the cane requires no irrigation and practically no cultivation excepting that of harvesting.

In the United States sugar beet produces a profit of from $15.00 to $40.00 per acre, on land costing from $40.00 to $200.00 per acre, while the average producer of cane sugar realizes an annual profit of from $40.00 to $90.00 per acre, on land costing from $20.00 to $50.00 per acre.

There are many other causes which argue in favor of the production of cane sugar as against that of beet. The milling season is extremely short in beet producing countries, whereas in Cuba quite a few of the mills grind for as many as nine months during the year, the average being five to six months.

SUGAR MILLS OF CUBA

Following is a list of sugar centrales of Cuba at the end of the grinding season 1916:

Name of Central	Location	1915 Crop	1916 Crop
Asuncion	Quiebra Hacha	46,584	38,881
Bramales	Cabanas	27,388	23,500
El Pilar	Artemisa	63,959	64,890
Galope	S. Juan y Martinez	(Capacity 75,000 Grinds, 1917)	
Gerardo	Bahia Honda	5,110	3,386
Mercedita	Cabanas	92,297	75,443
Orozco	Cabanas	42,462	36,483
San Ramon	Mariel	54,820	59,600
Amistad	Guines	175,250	260,000
Fajardo	Gabriel	39,676	64,500
Fortuna	Alquizar	17,829	53,096
Gomez Mena	San Nicolas	260,550	355,000
Guira	Guira Melena	8,221	34,679
Habana	Hoyo Colorado	39,765	60,125
Jobo	San Nicolas	93,563	104,279
Josefita	Los Palos	82,115	98,576
Julia, La	Duran	186,843	216,777
Loteria	Jaruco	19,597	25,788
Mercedita	Melena del Sur	173,648	205,000
N. S. Carmen	Jaruco	29,632	47,039
Nueva Paz	Los Palos	85,540	116,639
Portugalete	San Jose Lajas	51,136	73,814
Providencia	Guines	146,942	190,370
Rosario	Aguacate	186,408	214,394
San Agustin	Quivican	64,408	94,457
San Antonio	Madruga	131,500	154,000
Toledo	Marianao	150,346	207,702
Aguedita	Arabos	59,486	63,017
Alava	Banaguises	210,058	266,454
Araujo	Manguito	63,000	64,000
Armonia	Bolondron	77,872	81,093
Australia	Jaguey Grande	.....	28,500
Carolina	Coliseo	72,000	81,000
Conchita	Union de Reyes	292,661	323,742
Cuba	Pedro Betancourt	206,820	200,025
Dolores	Jovellanos	72,295	71,804
Dos Rosas	Cardenas	43,484	67,040
Dulce Nombre	Macagua	50,295	61,118

Name of Central	Location	1915 Crop	1916 Crop
Elena	Ceiba Mocha	19,116	14,155
Espana	Artemisal	158,009	161,636
Esperanza	Calimete	84,145	67,600
Feliz	Union de Reyes	145,438	141,181
Flora	Macurigues	109,432	101,534
Guipuzcoa	Hato Nuevo	55,098	121,446
Jesus Maria	Benavides	42,512	67,239
Limones	Limonar	84,800	120,000
Luisa (Condesa)	Limonar	23,804	31,500
Mercedes	Guareiras	301,835	308,219
Nueva Luisa	Jovellanos	(Supplying cane to Tinguaro)	
Olimpo	Carlos Rojas	(Burned in 1914)	
Por Fuerza	Calimete	66,085	70,000
Porvenir	Clara	20,000	19,000
Progreso	Contreras	144,312	154,312
Puerto	Canasi	24,143	23,750
Reglita	Perico	96,666	100,577
San Cayentano	Cidra	47,133	45,086
San Ignacio	Agramonte	120,491	116,071
S. J. Bautista	Canasi	20,992	28,199
San Vicente	Jovellanos	97,584	90,500
Santa Amalia	Coliseo	44,150	69,132
Sta. Gertrudis	Banaguises	204,687	202,319
Santa Rita	Baro	79,120	70,917
Sto. Domingo	Union de Reyes	79,537	79,232
Saratoga	Limonar	54,938	43,655
Socorro	Pedroso	338,700	338,069
Soledad	Jovellanos	136,392	156,625
Tinguaro	Perico	233,615	245,032
Triunfo	Limonar	21,960	18,600
Triunvirato	Cidra	26,316	32,550
Union	Agramonte	188,079	172,150
Adela	Remedios	83,688	100,074
Altamira	Zulueta	65,181	78,793
Andreita	Cruces	177,344	198,158
Caracas	Caracas	199,902	159,629
Caridad	Rancho Veloz	14,500	38,025
Carmita	Vega Alta	9,246	13,000
Cieneguita	Abreus	93,866	98,079
Constancia	Constancia	193,397	172,682
Constancia	Encrucijada	93,862	136,176
Corazon de Jesus	Sagua la Grande	48,057	65,783
Covadonga	Carreno	154,603	149,400

Name of Central	Location	1915 Crop	1916 Crop
Dos Hermanas	Cruces	95,732	98,294
Dos Hermanos.(Acea)	Palmira	34,092	36,419
Salvador El	Quem. de Guines	27,990	32,545
Fe	Salamanca	90,069	149,780
Fidencia	Placetas	81,186	122,160
Hormiguero	Hormiguero	219,457	191,404
Juragua	Juragua	55,129	62,819
Julia, La	Taguayabon	8,708	10,578
Lequeitio	Cartagena	161,500	175,120
Luisa y Antonia	Guanillas	21,530	6,500
Lutgardita	Carahatas	56,175	66,249
Macagua	Mata	37,237	53,781
Manuelita	Palmira	106,852	125,798
Mapos	Guasimal	54,951	53,426
Maria Antonia	Santo Domingo	.....	26,000
Maria Victoria	A. de Pasajeros	90,481	96,794
Narcisa	Yaguajay	116,918	125,000
Natividad	Sancti-Spiritus	22,347	31,927
Parque Alto	Parque Alto	77,354	79,197
Pastora	S. F. de los Yeras	63,438	72,133
Patricio	Encrucijada	100,593	133,065
Perseverancia	Real Campina	192,072	130,374
Portugalete	Palmira	111,311	106,011
Purio	Calabazar	77,840	89,548
Ramona	Rancho Veloz	52,950	69,845
Reforma	Caibarien	109,724	124,848
Regla	Manacas	6,600	5,000
Resolucion	Carahatas	45,897	55,151
Resulta	Sagua la Grande	76,622	104,251
Rosalia	Taguayabon	35,144	48,209
Rosa Maria	Mayajigua	6,945	38,354
San Agustin	Cruces	139,300	102,147
San Agustin	Remedios	74,651	141,299
San Antonio	Santa Clara	56,308	67,108
San Cristobal	Seibabo	20,769	18,000
San Francisco	Cruces	82,000	89,604
San Francisco Asis	Carahatas	29,191	36,255
San Isidro	Quem. de Guines	41,179	44,994
San Jose	Placetas	84,631	124,351
San Lino	Rodes	64,662	87,292
San Pablo	Zulueta	36,719	48,536
San Pedro	Guanillas	48,315	51,515
Santa Catalina	Cruces	95,719	104,018

Name of Central	Location	1915 Crop	1916 Crop
Sta. Lutgarda	Rancho Veloz	28,603	26,418
Sta. Lutgarda	Mata	72,672	112,330
Santa Maria	Ranchuelo	92,945	101,355
Santa Rosa	Ranchuelo	118,849	133,000
Santa Teresa	Sitiecito	137,703	182,921
Stma Trinidad	Ajuria	63,533	61,289
Soledad	Cienfuegos	126,045	142,533
Trinidad	Trinidad	96,727	85,877
Tuinicu	Tuinicu	168,133	172,683
Unidad	Cifuentes	86,879	115,403
Ulacia	Rodrigo	91,771	114,904
Vega, La	Guayos	49,216	92,168
Violeta	A. de Pasajeros	.....	74,000
Vitoria	Yaguajay	140,358	163,985
Washington	Hatuey	179,616	179,750
Zaza	Placetas	101,593	122,093
Adelaida	Near Moron	(Grinds in 1917)	
Agramonte	Florida	.....	65,731
Camaguey	Piedrecitas	99,286	105,950
Cespedes	Cespedes	.....	30,071
Ciego de Avila	Ciego de Avila	112,716	141,183
Elia	Guaimaro	.....	24,295
Florida	Florida	.....	74,091
Francisco	Sta. Cruz del Sur	258,967	306,500
Jagueyal	Ciego de Avila	225,705	233,618
Jatibonico	Jatibonico	275,297	285,909
Lugareno, El	Lugareno	63,422	153,791
Moron	Moron	175,542	170,263
Patria	Moron	.....	32,485
Punta Alegre	Punta Alegre	(Grinds in 1917)	
Senado, El	Senado	131,340	238,664
Stewart	Stewart	459,500	489,054
America	Maffo	40,123	70,000
Borjita	Dos Caminos	45,662	67,000
Boston	Banes	392,822	*453,000
Cape Cruz	Ensenada de Mora	99,903	126,515
Chaparra	Puerto Madre	517,010	613,454
Confluente	Guantanamo	52,223	46,821
Cupey	Cupey	.....	29,362
Delicias	Puerto Padre	311,012	430,168
Dos Amigos	Campechuela	65,767	62,180
Ermita	Ermita	.....	56,453

*Estimated, still grinding on August 8, 1916.

Name of Central	Location	1915 Crop	1916 Crop
Esperanza	Guantanamo	80,000	86,019
Hatillo	Hatillo	72,314	*80,000
Isabel	Guantanamo	65,591	55,583
Isabel	Media Luna	151,551	150,000
Jobabo	Jobabo	258,909	240,388
Los Canos	Guantanamo	61,883	72,000
Manati	Manati	199,354	279,000
Monona	Guantanamo	.....	3,384
Niquero	Niquero	168,585	176,546
Oriente	Palma Soriano	(Grinds in 1917 or 1918)	
Palma	Palma Soriano	.....	70,193
Palmarito	Palmarito	46,280	45,200
Preston	Preston	344,450	*440,000
Rio Cauto	Rio Cauto	72,811	68,825
Romelie	Guantanamo	47,291	28,500
Salvador	Manzanillo	42,446	72,176
San Antonio	Guantanamo	53,336	*70,000
San Manuel	Chaparra	(Supplying cane to Delecias)	
San Miguel	Guantanamo	32,886	28,000
San Ramon	Manzanillo	76,650	99,437
Santa Ana	Auza	54,966	59,000
Santa Cecilia	Guantanamo	60,111	51,354
Santa Lucia	Santa Lucia	340,065	*390,000
Santa Maria	Guantanamo	29,687	34,356
Sofia	Bayamo	32,444	35,170
Soledad	Guantanamo	113,902	104,467
Teresa	Ceiba Hueca	85,654	92,500
Tranquilidad	Manzanillo	11,500	15,117
Union	San Luis	51,500	63,880

*Estimated, still grinding on August 8th, 1916.

THE TOBACCO INDUSTRY OF CUBA

Up to the beginning of the present European War, the tobacco industry of Cuba ranged in importance, second only to that of sugar. The annual value of the crop in normal circumstances is about $32,000,000.00.

Since the beginning of hostilities in Europe, and the practical prohibition of tobacco and cigar imports on the part of England and France, and the cancelling of the customary orders, sent in from European countries, export of tobacco, especially finished cigars, has fallen off in the neighborhood of thirty per cent.

With the restoration of peace, and the resumption of normal conditions, it is reasonable to suppose that tobacco culture will again assume its original importance in the agricultural industries of the Republic; especially so, since Cuba has always been able to produce a grade of tobacco unequalled for its quality in any part of the world.

Tobacco, unlike sugar cane, appears to be dependent for its superior qualities, largely upon particular chemical characteristics of the soil, not easily determined, hence it is that the production is localized. Certain sections are given over entirely to tobacco production and yield a product many times more valuable than the product grown only a few miles distant.

The small selected areas, where the best tobacco is grown, are known as "vegas."

The acknowledged superior tobacco of the world, as to flavor and aroma, is grown within a comparatively short distance from the City of Pinar del Rio, in the Central Western section of

the province of the same name. This tobacco is known as "Vuelta Abajo" which, together with the wrapper tobacco of the Tumbadero and Guayabal districts, brings the highest prices per acre of any crop in Cuba. It is not unusual for tobacco producers to earn as high as $500.00 per acre and often $1,000 per acre is the results of a year's work in this industry.

Tobacco known as "Semi Vuelta" and various other names, is grown throughout the province of Pinar del Rio, especially on the Guane plains, in the valley of Vinales, and in "sumideros" or basins scattered throughout the mountains, as well as in the level country.

Unlike cane, tobacco is heavily fertilized, and owing to the value of the crop, is frequently grown under cheese cloth shade.

As a result of the care necessary for the production of the best leaf, $400.00 and $500.00 per acre is often expended in the production of a crop. The planting is done in the Fall months and the crop is gathered at the expiration of ninety days, after which follows the process of curing, selecting and marketing.

CUBA'S COFFEE INDUSTRY

The growing of coffee offers the home-seeker of moderate means many inducements. Coffee is most successfully grown on rolling lands, or hill sides, where the air is pure and shade grateful, the water fine and drainage perfect.

These conditions are found to perfection on the north coast of the Island.

The culture of coffee is not difficult, and by conforming to a few well known requirements, the industry can be carried on at small expense and with a limited amount of labor.

The coffee plant is an evergreen shrub, with a soft gray bark and dark green laurel-like leaves. The bloom is white pettled star shaped, with yellow centers, and the berries are bright red, growing close to the stem, appearing much as do our cherries in the United States. The bloom is most fragrant.

The shrub is seldom permitted to grow more than ten feet in height and begins to bear three or four years from planting. The berries ripen in about six months from time of blooming and each berry contains two seeds or coffee beans—the surrounding pulp shriveling up as the time approaches for picking. The berries are dried on floors or cloths and are ready for market.

The unpolished, unselected beans, are worth about $20.00 per hundred weight, and there is a continual demand at about this price, owing to the fact that Cuban coffee is particularly fine in quality.

In the local market, roasted coffee sells for from 40c to 50c per pound.

All of the six provinces of Cuba offer exceptional opportunities for the growing of coffee.

Up to the abolition of slavery, in the year 1878, the growing of coffee was one of the chief industries of the Island, but with the increased cost of labor, the culture of coffee has rapidly diminished.

Approximately 500 trees are planted to the acre in starting a coffee plantation, and this will yield, under favorable conditions, at the expiration of four years, about one-half pound to the tree—or 250 pounds to the acre, at a value of about $50.00 per acre. The sixth year, the trees produce about one pound each, making the acre produce about $100.00. Two years later the trees will produce about $200.00 per acre, and the tenth year, about $300.00 per acre; the twelfth year, $400.00 per acre, and succeeding years at least $500.00 per acre.

Coffee is a dependable crop, since it can always be stored in bonded warehouses and borrowed against to almost its entire value.

Cuba is importing about 20,000,000 pounds of coffee per year, with an extensive demand for their own home product.

There is a high protective tariff on imported coffees, which adds materially to the advantage of the coffee grower in Cuba.

THE CACAO INDUSTRY OF CUBA

The cultivation of the Cacao Bean, from which chocolate is made, forms an important industry in the agricultural life of Cuba.

It can be grown most successfully in connection with coffee, and while coffee thrives better on hillsides and mountain slopes, where fruit trees and palms furnish the necessary shade, the cacao is adapted to the rich deep soil found in the valleys and ravines that lie between these slopes.

Cacao demands lands that are moist and well drained, with all the humus and natural fertilizing elements possible.

The preparation of land for the growing of cacao includes first the removal of undergrowth and valueless timber, leaving only the royal palms and mangoes, together with a sufficient number of other large trees to warrant plenty of shade, since the cacao plant suffers during the first two or three years from long exposure to the direct rays of the sun. The large trees also serve as a wind-break, which is especially needed in the growing of this product.

Two hundred to three hundred trees are planted to the acre. The young plants spring from the carefully selected beans and evaporation is prevented by mulching with dead leaves.

The variety most commonly grown in Cuba is known as Theobroma, and begins to bear the fourth year, continuing in productivity for half a century.

Each tree will produce from ten to twelve pounds, and the average market price is $9.00

per hundred weight, which will yield about $100.00 per acre profit.

The method of gathering the crop is as follows:

The pods are removed from the trees in both Spring and Autumn. They are heaped in piles in order to hasten fermentation, which lasts four or five days. After this is completed, the beans are separated from the pods, washed in tanks and dried. The process is simple and rapid, requires no machinery and only a comparatively small amount of labor.

THE PINEAPPLE INDUSTRY

Pineapples have been grown in Cuba for export since the beginning of the first intervention and to some extent prior to that time. In point of money value, the pineapple industry ranks high. At the present time most of the pineapples intended for export are grown within fifty miles of the City of Havana. Over a million crates are shipped annually to the United States.

Pineapples may be grown on any rich soil and are considered one of the staple crops of Cuba. The slips, or off-shoots from the parent plant, are set out in long ridges, some four feet apart with intervening spaces averaging a foot. The plants produce fruit within one year of planting and from each original stalk an average of six or eight suckers may be taken for planting in new beds, so that with a very small start the acreage may be easily increased six or eight fold each year.

About eight thousand plants are considered sufficient for an acre of ground, and the cost of these plants is about $30.00 per acre. The preparation of the land for pineapples will run considerably more. The returns under favorable conditions will vary from $100.00 to $150.00 per acre. The average net profits from pineapples grown near Artemisa and Campo Florida, is said to be about $50.00 per acre. The high price of sugar since the beginning of the European war has caused much of the former pineapple acreage to be converted into sugar lands.

The profit derived from pineapple culture, as is the case with all fruits and vegetables of a

perishable nature, depends largely upon the shipping facilities and the localities selected.

A great opportunity is open for the canning of pineapples in Cuba, thus solving the question of transportation and increasing the price of the product, as has been done in the Hawaiian Islands.

The daily freight service between Havana and Key West has been most beneficial to pineapple shippers, and it is stated, on good authority, that a forty per cent increase in price has been made possible by this system.

THE CULTURE OF CITRUS FRUIT

Cuba is a natural citrus fruit country, since the sour and bitter orange trees are found wild in almost every forest of the Island.

The lime, growing in its natural state, is found in abundance scattered over the rocky hillsides. Almost everywhere in Cuba are found a few cultivated orange trees, the fruit of which are used for home consumption, but only since American industry took hold in Cuba has citrus fruit been undertaken as a commercial possibility.

Within a comparatively small radius of Havana are many beautiful groves producing excellent revenues.

In the local markets, home grown oranges bring from $6.00 to $15.00 per thousand.

The gradually increasing demand for this fruit in the United States should prove an incentive to any one interested in this class of horticulture.

There are more than 20,000 acres already planted in citrus fruit in Cuba. The total value of estates in this enterprise is about $15,000,000.00.

MANGOS

One of the most abundant and delicious fruits in Cuba is the Mango, which grows wild in the forest and will be found along every roadway and in the meadows of the Island. Both tree and fruit resemble the peach in many respects, although the Mango tree grows much larger, frequently attaining a height of fifty or sixty feet. The leaves are long, dark and glossy. The fruit is slightly pear shaped, smooth of skin and varying in tints of yellow, red and russet brown. It is peculiarly refreshing in flavor.

The Mango is an exceedingly delicate fruit and for this reason export shipments have not taken place to any extent.

The fruit comes into bearing in the month of April and continues into September.

The higher qualities grown on grafted trees from India and China sell for from twenty-five to fifty cents each.

HENEQUEN IN CUBA

Owing to the chaotic conditions which have prevailed in Mexico, the home of Henequen, for the past three or four years, the manufacture of sisal is today practically at a standstill in that Republic. Many of the large estates have been confiscated by the various political chiefs and thus the owners are seeking investments in other parts of the world. Cuba, lying, as it does, in the same latitude as the Yucatan Peninsula, offers a most exceptional opportunity for the growing of this valuable product.

The Cuban Republic gives absolute protection to the industries of the Island and climate and soil are infinitely better adapted there to the growing of Henequen than is the country in which it first won its fame as a money maker.

Henequen produces a strong fiber only where the soil covers a soft limestone rock, from which the roots apparently secure those elements going to make fiber strong. Cuba has this advantage, and in addition to this, the abundant rainfall gives a more rapid growth so that a Henequen sucker planted in Cuba will produce, in five years, a yield that could not be attained in less than ten or twelve years in Yucatan.

As a result of the discovery of better Henequen growing conditions in Cuba, the demand for Henequen lands is rapidly advancing. Within the past year, land suitable for Henequen growing, has advanced from fifty cents to fifteen dollars per acre. Within the past six months, Mexican Henequen growers have purchased approximately 50,000 acres of these lands.

The high prices, and growing demand for the

fiber throughout the world, makes this industry a most exceptional opportunity on the Island.

The crop is abundantly sure, if planted on the right soil. Lack of rain or long draughts are matters of no importance and the plant will continue to thrive and grow without deterioration in the quality of the fiber.

In Cuba the Henequen plant grows at an average of one inch on each leaf per month.

The Henequen plant has absolutely no enemies. Even fire fails to injure it; cattle will not eat it, and the crop is never stolen as it could never be sold in small quantities.

It is grown on hillsides unsuitable for other cultivation, and the crop may be cut and conveyed to the decortication plants at any season of the year.

The life of the Henequen plant is from fifteen to twenty years, and the average yield in Cuba is about seventy pounds of fiber to 1,000 leaves, while in Yucatan the yield seldom exceeds fifty pounds.

The fiber is indispensable in manufacturing the world's supply of rope, cordage, binding twine, bagging and other rough fabrics.

Estimate of the cost, Growing Henequen and Producing Sisal, or Fiber from same in the Republic of Cuba.

100 acres is used as the unit of measure.

Cost of 75,000 plants at $12.00 per 1,000	$ 900.00
Cost of preparing land	770.00
Cost of planting at $5.00 per 1,000	375.00
Cost of caring for and cultivating during 4 years	1,350.00
Cost of cutting 5,250,000 leaves at 50c per 1,000	2,625.00
Cost of conveying to mill at 20c per 1,000	1,050.00
Cost of decortication at 12½c per 1,000	654.00
Cost of baling 920 bales at 30c per bale	276.00
	$ 8,000.00

Returns from first cutting 4 years from planting 75,000 plants at 70 pencas (leaves to the plant), 5,250,000 pencas.

5,250,000 leaves will yield 70 lbs. of fiber to the 1,000 leaves or pencas or 367,500 lbs. at 7c per lb	$25,725.00
Cost of production	8,000.00
Net profit per 100 acres	$17,725.00
Net profit per acre	177.25

ANNUAL EXPENSE AFTER THE FIRST CUTTING

Cost of cutting 3,000,000 pencas (40 pencas to the plant) at 50c per 1,000	$ 1,500.00
Cost of carting same to the mill at 20c per 1,000	600.00
Cost of decortication at 12½c per 1,000	375.00
Cost of baling at 30c per bale	157.00
	$ 2,632.00

RETURNS FROM EACH SUCCESSIVE CUTTING AFTER THE FIRST

75,000 plants, 40 leaves to the plant—3,000,000.

70 lbs. of fiber to every 1,000 leaves, 210,000 lbs. of fiber at 7c per lb	$14,700.00
Cost of production	2,632.00
Net profit per 100 acres	$12,068.00
Net profit per acre	120.68

VALUABLE HARDWOOD OF CUBA

The virgin forests of Cuba abound in valuable hardwoods, such as mahogany, Spanish cedar, rosewood, ebony, lignum-vitae and others. So abundant, in fact, are the hardwoods in these forests, that such valuable woods as mahogany, ebony and lignum-vitae, are used as railroad ties, while in the United States they are sold by the pound.

The constant demand for cedar and mahogany has caused these two woods to be culled out of every forest bordering on the seashore, as far back as the price of the wood on the coast would cover the cost of cutting, trimming, and hauling to deep water. This practice has been carried on for one hundred or more years, and has caused most of the coast land forests to be denuded of the best known woods, large enough for commercial purposes.

With the completion of the Van Horn railroad, which connects Havana, in the West, with Santiago, in the East, another area of cedar and mahogany was opened up and has been worked quite extensively during the past twelve years.

There are still large amounts of cedar, mahogany and other fine woods scattered throughout the mountain districts, but they are unavailable until more modern methods of transportation are secured, than those furnished by the ox-cart. These sections will remain as an unavailable asset in the country's national wealth until enterprise finds a way of transporting the product.

There are three hundred and sixty-six different woods registered and described in detail in the

archives of the Department of Agriculture, most of which are absolutely unknown outside of the Republic. Most of these are extremely useful, not only for general construction purposes, but as railroad ties that will not rot, handles for tools, implements, etc., ship building, carving, and such other purposes for which hardwoods are always in demand.

STOCK RAISING IN CUBA

Cuba, as a whole, offers in abundance, the essential conditions necessary to successful stock raising—nutritious grasses, good drinking water, a climate devoid of extremes in temperature and a steady market always accessible.

There are hundreds of thousands of acres of well watered and well drained lands that possess all of these qualities. Much of the territory formerly devoted to grazing has been recently planted in sugar cane, owing to the high price of sugar, but there still remain large tracts in all of the six provinces, that are not only available for stock raising, but which would produce, under proper management, returns quite as satisfactory as those derived from the sugar industry.

The two grasses best suited for milk or fattening purposes, were imported into Cuba many years ago and are known as the "Parana," brought from the Argentine and best suited to the level lands; and the "Guinea" grass, which was brought from the west coast of Africa and is particularly suited for the mountain sides and crests, up to an altitude of 2,000 feet.

One hundred acres in either one of these grasses, under favorable conditions, will maintain from fifty to seventy head of cattle in good condition throughout the year.

In Cuba there are several varieties of native grasses that spring up in the valleys or whenever the undergrowth is removed from forest lands.

There is every reason to believe that alfalfa will prove as well adapted to Cuba as it has to some parts of the United States, although up to

the present time but few experiments have been made with it.

On President Menocal's farm, some eight miles from Havana, a splendid stand of this grass has been made and several crops cut the first year. Inocculation of the soil seems to be the only requirement to make this excellent forage thrive on the Island.

The Government experimental station, at Santiago de las Vegas, has succeeded in introducing several new grasses on the heavy clay soils of that neighborhood.

Water is available in almost any part of the Island, in the rivers and small streams. Wells may be sunk and made to produce excellent water at depths varying from twenty to two hundred feet, and in the mountains, never-failing springs are found in abundance.

The province of Camaguey has always been noted for its fine "Potreros" or meadows since a large part of that middle belt has always been comparatively free from forest and devoted to stock raising.

In Havana and Matanzas provinces, good lands command such prices that they are rather prohibitive for stock raising purposes, but in Pinar del Rio, there are still extensive tracts in the level sections and in the foothills which furnish ideal grazing lands and which, if not absorbed by sugar cane planters will eventually become one of the most successful stock raising districts in the Republic.

These lands may be secured at the present time, in large tracts, at prices ranging from $20.00 to $40.00 per acre, and should produce a

yield of from 20 per cent to 40 per cent on the investment.

At the beginning of the War of Independence, in 1895, over three million head of native cattle were registered in the Island of Cuba. The four years of continual struggle between Spain and the people of Cuba almost exterminated this stock. At the beginning of the first intervention cattle were rushed into Cuba from all nearby countries, including Texas, Florida, Venezuela and Mexico. During the past few years quite a number of high grade animals have been introduced for breeding purposes, and the condition of present herds are rapidly improving.

Cuba is quite as well adapted for the raising of horses and mules as any part of the United States.

The abundance of food found throughout the year, the lack of sleet or snow, or cold, wet rains, assure conditions ideal for the growth of young animals up to the point of maturity.

A great many American horses were brought to Cuba by the army of occupation, and it is a notable fact that the losses by disease were less than were experienced in their native country.

The native Cuban horses are of the Arabian stock, introduced in Cuba by the first Spanish conquerors. They are hardy, gentle, good breeders, and of marvelous endurance. When crossed with good Kentucky, Missouri, or Montana stock, they prove excellent service animals.

The breeding of mules, for which there is a great demand in Cuba, would prove a most profitable enterprise, particularly since it will be but a short time when the slow going ox-cart must give way to more rapid methods of transportation in the sugar districts.

SMALL STOCK RAISING

HOGS—SHEEP—GOATS

Cuba, at the present time, is importing approximately ten million dollars' worth of pork and pork products annually, notwithstanding the fact that the Island, owing to especial conditions for raising hogs economically, should not only supply the local demand, but can and will, ultimately be exporting pork products to all of the nearby countries bordering on the Caribbean Sea and the Gulf of Mexico.

The royal palm, which covers many of the hillsides and slopes of the long mountain chains, running parallel with the coast, produces a small nut called "palmiche" that furnishes a never-failing food which helps the stockman in raising hogs.

The "palmiche," picked up by the animals at the base of the palms, if in sufficient quantity, will keep these animals in fairly good condition throughout the year. Shoats, intended for market, as soon as weaned, should be turned into a field planted with sugar cane, sweet potatoes, peanuts, yuca, corn, cow peas, "calabaza" or any of those food crops of which hogs are fond and which produce flesh rapidly.

"Palmiche" fed pork is considered a greater delicacy than turkey or chicken. The native or domestic hog of the Island is, as might be expected, a common or scrub product, that, while healthy and prolific, puts on flesh slowly, and is fitted only for fresh pork. This pork, however, with its nutty flavor of the "palmiche" is excellent eating, and when cooked, retails during the holidays at 75 cents per pound.

The population of the Republic is two and a half millions, increasing at the rate of seventy-five thousand per year. The demand for fresh pork in Havana is constant at from 8½ cents to 9 cents per pound, gold, on the hoof. Hams, at wholesale, sell at 26 cents per pound, and other pork products in proportion.

Hogs breed twice a year in Cuba, and the climate, free from extreme heat or cold, enables probably a larger percentage of the young to be brought to maturity, with less care and less risk, than in any section of the United States. Science, today, has rendered it possible to eliminate the danger from contagious diseases to pork, hence it is that the raising of "small stock," especially hogs, under supervision of intelligent management, will prove to be one of the most remunerative industries of the Republic.

SHEEP. Owing to the genial climate, sheep, lacking the necessity for wool with which to retain warmth, very naturally lose it within a comparatively few years. Mutton, however, always commands a good price in the local markets, hence it is that the raising of sheep for food, especially by those small farmers who are close to large markets, will always yield a satisfactory return.

Up to the present time, little discrimination has been used in introducing those breeds of sheep that are best adapted for the production of mutton. That which they have is usually tender, and of excellent flavor, and if the small farmers would take the trouble to import good rams from desirable breeds in the United States, the raising of mutton, even as a side issue, would

add greatly to the revenue of those farms that are located near large consuming centers.

GOATS. The Republic of Mexico, for many years past, has derived a very large revenue from the sale of goat skins, most of which were purchased by the New England shoe factories, while the by-products in the form of salted and sun-dried meat, fat, and other materials, always command a market. The recent wars of devastation have practically annihilated all of the great herds of goats in Mexico. During the past three or four years they have been furnishing food to the roving bands of different contestants in that unfortunate country.

If the men interested in the industry would take pains to look into this matter, the advantages which Cuba offers would be manifest. The hills and mountain sides of the Republic are clothed to their summits, with underbrush whose tender young shoots furnish excellent feed for animals that browse, and yet the raising of goats has never been considered commercially.

Under the management of men who are familiar with the raising of goats for their hides, and above mentioned by-products, there is no reason why this industry should not assume importance in Cuba, especially since these animals are invaluable for the purpose of cleaning out undergrowth, economically and effectively.

Detailed information not covered in this book will be supplied upon application to

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